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Search for sterile neutrino oscillations in muon neutrino disappearance in MINOS/MINOS+

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Session and Location

Monday Session, Poster Wall #140 (Hölderlin-Room)

Abstract content

The three-flavor neutrino oscillations model has precisely described a wide selection of neutrino oscillations data, yet, the observations by LSND and MiniBooNE of excess electron neutrino appearance can be interpreted utilizing a model containing three active neutrinos and one sterile neutrino. MINOS+, the medium-energy extension of the successful MINOS experiment, is a two-detector, long baseline neutrino experiment which samples the NuMI beam. Comparison of both neutral-current and charged-current interactions observed at the Near and Far Detectors allows MINOS+ to probe with great precision muon neutrino disappearance along the long baseline, which not only permits the high precision measurement of three-flavor neutrino oscillations but also allows for searches for anomalous oscillation behaviors. We demonstrate that MINOS and MINOS+ set world-leading upper limits on sterile neutrino mediated oscillations in a 3+1 model over four orders of magnitude in Δm^2_{41}.

Poster included in proceedings:

yes

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